IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | | |
|---|---|---|---|
| **Appl. No.** | : | **10/759,204** | Confirmation No. 7747 |
| Applicant | : | SHIMIZU, A. et al. | |
| Filed | : | January 20, 2004 | |
| Title | : | COMPUTER SYSTEM CONTROLLING ACCESSES TO STORAGE APPARATUS | |
| TC/AU | : | 2182 | |
| Examiner | : | TBD | |
| Docket No. | : | NIT-407 | |
| Customer No.: | | 24956 | |

**PETITION TO MAKE SPECIAL**
**(ACCELERATED EXAMINATION UNDER MPEP § 708.02(VIII))**

**MAIL STOP PETITIONS**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Applicants petition the Commissioner to make the above-identified application special in accordance with 37 CFR §1.102(d). In support of this Petition, pursuant to MPEP § 708.02(VIII), Applicants state the following.

**(A) REQUIRED FEE**

This Petition is accompanied by the fee set forth in 37 CFR § 1.117(h). Payment of the fee has been made in the manner set forth below in Section (G).

## (B) ALL CLAIMS ARE DIRECTED TO A SINGLE INVENTION

Claims 1-6 are pending in the application. All the pending claims of the application are directed to a single invention. If the Office determines that all claims in the application are not directed to a single invention, Applicant will make election without traverse as a prerequisite to the grant of special status in conformity with established telephone restriction practice.

The claimed invention, as set forth in independent claims 1, 2, 3, 5 and 6, is generally directed to toward issuing an IO request to a storage apparatus. Under independent claim 1, the invention is an IO-requesting method of issuing an IO request to a storage apparatus of a computer system by execution of a program in said computer system, wherein a program identifier set in advance in said program and a request address are applied to a first function for inputting two values to generate one value used as a new address with said program identifier appended thereto, and said IO request is issued by using said new address.

Additionally, under independent claim 2, the invention is a computer executing a first program issuing an IO request to a storage apparatus and a second program for collecting said IO request and transmitting said IO request as an IO command to said storage apparatus wherein: a program identifier set in advance in said first program and a request address are applied to a first function for inputting two values, that is, said program identifier and said request address, to generate one value used as a new address with said program identifier appended thereto, and said IO request is issued by using said new address; said second program has a table associating a

program identifier, a logical volume existing in said storage apparatus and a network address with each other; and if said IO request is an IO request issued to a logical volume existing in said storage apparatus as a logical volume prescribed to be a protected logical volume, a second function for carrying out an operation to input one value for generation of two output values as an operation inverse to that of said first function generates an original request address and a program identifier, that is, said two output values, from said one input value, that is an address specified in said IO request as said new address, said table is searched for a network address associated with said generated program identifier and a logical volume indicated by said generated original request address and a communication with said storage apparatus is carried out by using said network address as an address of a transmission originator in order to issue an IO command to said original request address.

Additionally, under independent claim 3, the invention is a computer system comprising one or more computers and one or more storage apparatus connected to said computers by a network apparatus wherein: in each of said computers: first program issuing an IO request to a storage apparatus and a second program for collecting said IO request and transmitting said IO request as an IO command to said storage apparatus are executed; a program identifier set in advance in said first program and a request address are applied to a first function for inputting two values, that is, said program identifier and said request address, to generate one value used as a new address with said program identifier appended thereto, and said IO request

is issued by using said new address; said second program has a table associating a program identifier, a logical volume existing in said storage apparatus and a network address with each other; and if said IO request is an IO request issued to a logical volume existing in said storage apparatus as a logical volume prescribed to be a protected logical volume, a second function for carrying out an operation to input one value for generation of two output values as an operation inverse to that of said first function generates an original request address and a program identifier, that is, said two output values, from said one input value, that is an address specified in said IO request as said new address, said table is searched for a network address associated with said generated program identifier and a logical volume indicated by said generated original request address and a communication with said storage apparatus is carried out by using said network address as an address of a transmission originator in order to issue an IO command to said original request address, and on the basis of said network address used as an address of a transmission originator, said network apparatus determines whether or not a communication with said storage apparatus can be carried out.

Additionally, under independent claim 5, the invention is an access control method adopted for a storage apparatus, said method comprising the steps of: recognizing a received IO command as an IO command issued to a logical volume existing in said storage apparatus as a logical volume prescribed to be a logical volume protected from a received IO command; using a second function for inputting one value to generate two output values as a function for obtaining a second address

and a program identifier, that is, said two output values, from said one value, that is, a first address specified in said IO command; determining whether or not an access to said logical volume can be made on the basis of said program identifier and an association table; and replacing said first address specified in said IO command with said second address and processing said IO command in case an access by using said IO command is determined to be an access that can be made, wherein said association table is provided as a table for associating a logical-volume identifier with a program identifier for identifying a program allowed to make an access to a logical volume identified by said logical-volume identifier.

Additionally, under independent claim 6, the invention is an access control method adopted for a storage apparatus, said method comprising the steps of: recognizing a received IO command included in a packet transmitted through a network as an IO command issued to a logical volume existing in said storage apparatus as a logical volume prescribed to be a logical volume protected from a received IO command; using a second function for inputting one value to generate two output values as a function for obtaining a second address and a program identifier, that is, said two output values, from said one value, that is, a first address specified in said IO command; determining whether or not said packet can be transferred to said storage apparatus on the basis of said program identifier and an association table; and replacing said first address specified in said IO command with said second address and transmitting said packet in case an access by using said IO command is determined to be an access that can be made, wherein said association

table is provided as a table for associating a storage-apparatus identifier for identifying said storage apparatus, a logical-volume identifier for identifying a logical volume existing in said storage apparatus and a program identifier for identifying a program allowed to make an access to said logical volume identified by said logical-volume identifier with each other.

## (C) PRE-EXAMINATION SEARCH

A pre-examination search has been conducted, directed to the invention as claimed. The pre-examination search was conducted in the following US Manual of Classification areas:

| Class | Subclass |
|---|---|
| 710 | 1 |
| 711 | 114, 163, 202, 203, 220 |
| 713 | 181, 190, 193 |

Additionally, a computer database search was conducted on the USPTO EAST database.

## (D) REFERENCES DEEMED MOST-CLOSELY RELATED TO THE SUBJECT MATTER ENCOMPASSED BY THE CLAIMS

Based upon a review of the documents located by the search and the documents already of record in the application, the references deemed to be most-closely related to the subject matter encompassed by the claims are listed below.

| Document No. | Inventor |
|---|---|
| US 20020087824 A1 | Hum et al. |
| US 20040010701 A1 | Umebayashi et al. |

Because all of the above-listed references (as well as any other references uncovered during the search) have been made of record in the present application by an Information Disclosure Statement filed on the same date as this paper, in accordance with MPEP § 708.02(VIII)(D), additional copies of these documents have not been submitted with this Petition.

## (E) DETAILED DISCUSSION OF THE REFERENCES

Following a brief discussion of features of the invention in Section (E)(1) below, the references deemed most-closely related are discussed in Section (E)(2) below, pointing out, with the particularity required by 37 CFR 1.111 (b) and (c), how the claimed subject matter is patentable over the teachings of these documents.

### (1) It is Submitted that the Present Invention is Patentable Over the References for the Following Reasons

It is submitted that the cited references, whether taken individually or in combination with each other, fail to teach or suggest the invention as claimed. In particular, the cited references, at a minimum, fail to teach or suggest, as recited in the claims:

a first feature of the present invention, as recited in independent claim 1, comprising issuing an IO request wherein a program identifier set in advance in the program and a request address are applied to a first function for inputting two values to generate one value used as a new address with the program identifier appended thereto;

a second feature of the present invention, as recited in independent claim 2, comprising issuing an IO request wherein a program identifier set in advance in said first program and a request address are applied to a first function for inputting two values, that is, said program identifier and said request address, to generate one value used as a new address with said program identifier appended thereto;

a third feature of the present invention, as recited in independent claim 3, comprising issuing an IO request wherein a program identifier set in advance in said first program and a request address are applied to a first function for inputting two values, that is, said program identifier and said request address, to generate one value used as a new address with said program identifier appended thereto;

a fourth feature of the present invention, as recited in independent claim 5, comprising recognizing a received IO command and using a second function for inputting one value to generate two output values as a function for obtaining a second address and a program identifier, that is, said two output values, from said one value, that is, a first address specified in said IO command; and

a fifth feature of the present invention, as recited in independent claim 6, comprising recognizing a received IO command and using a second function for inputting one value to generate two output values as a function for obtaining a second address and a program identifier, that is, said two output values, from said one value, that is, a first address specified in said IO command.

To the extent applicable to the present Petition, Applicants submit that although the distinguishing feature for claim 1 may represent a substantial portion of the claimed invention of claim 1, the claimed invention including said feature and the inter-operation of the claimed limitations provides a novel method of issuing an IO request not taught or suggested by any of the references of record.

**(2) Discussion of the References Deemed to be Most-Closely Related**

The references considered most closely related to the claimed invention are briefly discussed below:

The patent application publication to Hum et al. (US 20020087824 A1) provides a system and method for employing a process identifier to minimize aliasing in a linear-addressed cache. Disclosed is a process identifier that is unique to a process being combined with a portion or all of the linear address to form an adjusted-linear address. The identifier may be combined with the linear address by methods that include, among others, concatenating or hashing together the linear address and the process identifier. Under an embodiment of Hum et al., there is shown an adjusted-linear-addressed cache memory replacing system, wherein, if a data block referenced by a linear address 10a does not reside in an adjusted-linear-addressed cache memory 310, then one of the cache lines, as selected by a replacement policy, of adjusted-linear-addressed cache memory 310 is replaced with

the data block that is referenced by linear address 10a, and the tag for this cache line is set accordingly. (See, e.g., paragraphs 16, 18 and 23.)

Thus, Hum et al. teach an adjusted linear-addressed cache memory replacing system, and Hum et al. do not teach or suggest the features of the present invention, such as that a program issuing an I/O request submits the request address and program identifier to a function to generate a new value used as a new address with an appended program identifier, or that, in an access control method, a received IO command is recognized and a second address and a program identifier are obtained.

More particularly, Hum et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 2, the above-described third feature of the present invention, as recited in independent claim 3, the above-described fourth feature of the present invention, as recited in independent claim 5, or the above-described fifth feature of the present invention, as recited in independent claim 6.

The patent application publication to Umebayashi et al. (US 20040010701 A1) shows a data protection program and data protection method. Disclosed is a method for monitoring access to a resource 1 to be protected. An access request 2c for accessing resource 1 is received by the resource. It is determined whether access to resource 1 is permitted by referencing access permission management table 3 for identification information 4 about request source program 2 that has output the

access request. If an access request is issued from a program whose identification information has not been registered in the access permission management table 3, then its access request is rejected. If the access to the resource 1 is permitted, then the data 1a in the resource 1 is processed in response to the access request 2c. (See, e.g., Figure 1; and paragraphs 41-43.)

However, Umebayashi et al. do not teach or suggest the features of the present invention, such as that a program issuing an I/O request submits the request address and program identifier to a function to combine and generate a new address with an appended program identifier, or that access is controlled by recognizing a received IO command and obtaining a second address and a program identifier.

More particularly, Umebayashi et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 2, the above-described third feature of the present invention, as recited in independent claim 3, the above-described fourth feature of the present invention, as recited in independent claim 5, or the above-described fifth feature of the present invention, as recited in independent claim 6.

Therefore, since the cited references, at a minimum, fail to teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 2, the above-described third feature of the present invention, as

recited in independent claim 3, the above-described fourth feature of the present invention, as recited in independent claim 5, and the above-described fifth feature of the present invention, as recited in independent claim 6, it is submitted that all of the claims are patentable over the cited references, whether the references are taken individually or in combination with each other.

**(F) Conclusion**

Applicants have conducted what they believe to be a reasonable search, but make no representation that "better" or more relevant prior art does not exist. The United States Patent and Trademark Office is urged to conduct its own complete search of the prior art, and to thoroughly examine this application in view of the prior art cited herein and any other prior art that the United States Patent and Trademark Office may locate in its own independent search. Further, while Applicants have identified in good faith certain portions of each of the references listed herein in order to provide the requisite detailed discussion of how the claimed subject matter is patentable over the references, the United States Patent and Trademark Office should not limit its review to the identified portions but rather, is urged to review and consider the entirety of each reference, and not to rely solely on the identified portions when examining this application.

In view of the foregoing, Applicants request that this Petition to Make Special be granted and that the application undergo the accelerated examination procedure set forth in MPEP 708.02 VIII.

**(G) FEE PAYMENT (37 C.F.R. 1.17(h))**

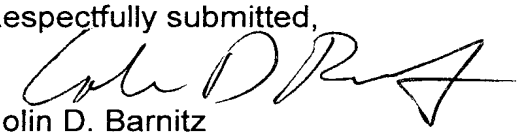
The fee required by 37 C.F.R. § 1.17(h) is to be paid by:

**[X]** the Credit Card Payment Form (attached) for $130.00.

**[ ]** charging Account 50-1417 the sum of $130.00.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417. A duplicate of this petition is attached.

Respectfully submitted,



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PTO/SB/17 (12-04)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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# FEE TRANSMITTAL for FY 2005

*Effective 12/08/2004. Fees pursuant to the Consolidated Appropriations Act. 2005 (H.R. 4818).*

| TOTAL AMOUNT OF PAYMENT | ($) 130.00 |
|---|---|

| *Complete if Known* | |
|---|---|
| Application Number | 10/759,204 |
| Filing Date | January 20, 2004 |
| First Named Inventor | A. SHIMIZU |
| Attorney Docket No. | NIT-407 |

## METHOD OF PAYMENT (check all that apply)

☐ Check ☒ Credit Card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 50-1417

Deposit Account Name: MATTINGLY,STANGER & MALUR,P.C.

**The Director is authorized to:** (*check all that apply*)

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) during the pendency of this application.

☐ Charge fee(s) indicated below, **except for the filing fee to the above-identified deposit account.**

## FEE CALCULATION

### 1. BASIC FILING FEE

| Large Entity Fee Code | Large Entity Fee ($) | Small Entity Fee Code | Small Entity Fee ($) | Fee Description | Fee Paid |
|---|---|---|---|---|---|
| 1011 | 300 | 2011 | 150 | Utility filing fee | |
| 1012 | 200 | 2012 | 105 | Design filing fee | |
| 1013 | 200 | 2013 | 100 | Plant filing fee | |
| 1014 | 300 | 2014 | 150 | Reissue filing fee | |
| 1005 | 200 | 2005 | 100 | Provisional filing fee | |
| 1111 | 500 | 2111 | 250 | Utility Search fee | |
| 1112 | 100 | 2112 | 50 | Design Search fee | |
| 1113 | 300 | 2113 | 150 | Plant Search fee | |
| 1114 | 500 | 2114 | 250 | Reissue Search fee | |
| 1311 | 200 | 2311 | 100 | Utility Ex. fee | |
| 1312 | 130 | 2312 | 65 | Design Ex. fee | |
| 1313 | 160 | 2313 | 80 | Plant Ex. fee | |
| 1314 | 600 | 2314 | 300 | Reissue Ex. fee | |
| | | | | **SUBTOTAL (1)** | 0.00 |

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

| | Extra Claims | | Fee from below | | Fee Paid |
|---|---|---|---|---|---|
| Total Claims | -20 | = | x 50 | = | |
| Indep. Claims | -3 | = | x 200 | = | |
| Multiple Dependent | | | 360 | = | |

| Large Entity Fee Code | Large Entity Fee ($) | Small Entity Fee Code | Small Entity Fee ($) | Fee Description |
|---|---|---|---|---|
| 1202 | 50 | 2202 | 25 | Claims in excess of 20 |
| 1201 | 200 | 2201 | 100 | Independent claims in excess of 3 |
| 1203 | 360 | 2203 | 180 | Multiple dependent claim, if not paid |
| 1204 | 200 | 2204 | 100 | ** Reissue independent claims over original patent |
| 1205 | 50 | 2205 | 25 | ** Reissue claims in excess of 20 and over original patent |

**SUBTOTAL (2) $** 0.00

***or number previously paid, if greater; For Reissues, see above.*

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

| Large Entity Fee Code | Large Entity Fee ($) | Small Entity Fee Code | Small Entity Fee ($) | Fee Description | Fee Paid |
|---|---|---|---|---|---|
| 1051 | 130 | 2051 | 65 | Surcharge – late filing fee or oath | |
| 1052 | 50 | 2052 | 25 | Surcharge – late provisional filing fee or cover sheet | |
| 1053 | 130 | 1053 | 130 | Non-English specification | |
| 1081 | 250 | 2081 | 125 | Utility Application Size fee – for each 50 over 100 | |
| 1082 | 250 | 2082 | 125 | Design Application Size fee – for each 50 over 100 | |
| 1812 | 2,520 | 1812 | 2,520 | For filing a request for *ex parte* reexamination | |
| 1804 | 920* | 1804 | 920* | Requesting publication of SIR prior to Examination action | |
| 1805 | 1,840* | 1805 | 1,840* | Requesting publication of SIR after Examiner action | |
| 1251 | 120 | 2251 | 60 | Extension for reply within first month | |
| 1252 | 450 | 2252 | 225 | Extension for reply within second month | |
| 1253 | 1020 | 2253 | 510 | Extension for reply within third month | |
| 1254 | 1,590 | 2254 | 795 | Extension for reply within fourth month | |
| 1255 | 2,160 | 2255 | 1,080 | Extension for reply within fifth month | |
| 1401 | 500 | 2401 | 250 | Notice of Appeal | |
| 1402 | 500 | 2402 | 250 | Filing a brief in support of an appeal | |
| 1403 | 1000 | 2403 | 500 | Request for oral hearing | |
| 1451 | 1,510 | 1451 | 1,510 | Petition to institute a public use proceeding | |
| 1452 | 500 | 2452 | 250 | Petition to revive – unavoidable | |
| 1453 | 1,500 | 2453 | 750 | Petition to revive – unintentional | |
| 1501 | 1,400 | 2501 | 700 | Utility issue fee (or reissue) | |
| 1502 | 800 | 2502 | 400 | Design issue fee | |
| 1503 | 1,100 | 2503 | 550 | Plant issue fee | |
| 1460 | 130 | 1460 | 130 | Petitions to the Commissioner | |
| 1807 | 50 | 1807 | 50 | Processing fee under 37 CFR 1.17(q) | |
| 1806 | 180 | 1806 | 180 | Submission of Information Disclosure Stmt | |
| 8021 | 40 | 8021 | 40 | Recording each patent assignment per property (times number of properties) | |
| 1809 | 790 | 2809 | 395 | Filing a submission after final rejection (37 CFR § 1.129(a)) | |
| 1810 | 790 | 2810 | 395 | For each additional invention to be examined (37 CFR § 1.129(b)) | |
| 1801 | 790 | 2801 | 395 | Request for Continued Examination (RCE) | |
| 1802 | 900 | 1802 | 900 | Request for expedited examination of a design application. | |
| Other fee (specify) | | 1464 | | PETITION TO MAKE SPECIAL | |
| *Reduced by Basic Filing Fee Paid | | | | **SUBTOTAL (3) ($)** | 130.00 |

| SUBMITTED BY | | Complete (*if applicable*) | | | |
|---|---|---|---|---|---|
| Name (Print/Type) | Colin D. Barnitz | Registration No. (Attorney/Agent) | 35,061 | Telephone | (703) 684-1120 |
| Signature | | | | Date | November 2, 2005 |